

## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. 2001-NE-30-AD; Amendment 39-14728; AD 2006-17-07]**

**RIN 2120-AA64**

**Airworthiness Directives; Pratt & Whitney JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, -11, -15, -15A, -17, -17A, -17R, -17AR, -209, -217, -217A, -217C, and -219 Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

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**SUMMARY:** The FAA is superseding an existing airworthiness directive (AD) for Pratt & Whitney (PW) JT8D-209, -217, -217A, -217C, and -219 turbofan engines. That AD currently requires initial and repetitive visual inspections for fretting and fluorescent magnetic particle inspections (FMPI) for cracking in the area of the tierod holes on 8th stage high pressure compressor (HPC) front hubs (from here on, referred to as HPC front hubs) that have operated at any time with PWA 110-21 coating. This AD requires either replacing HPC front hubs and HPC disks that have operated at any time with PWA 110-21 coating and that operated in certain engine models, or, visually inspecting and FMPI for cracking of those parts and re-plating them if they pass inspection. This AD also requires adding JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, -11, -15, -15A, -17, -17A, -17R, and -17AR engines to the applicability. This AD results from an investigation by PW, which concluded that any HPC front hub or HPC disk coated with PWA 110-21 that ever operated on JT8D-15, -15A, -17, -17A, -17R, -17AR, -209, -217, -217A, -217C, and -219 turbofan engines, could crack before reaching their published life limit. We are issuing this AD to prevent a rupture of an HPC front hub or an HPC disk that could result in an uncontained engine failure and damage to the airplane.

**DATES:** This AD becomes effective October 4, 2006. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of October 4, 2006.

**ADDRESSES:** You can get the service information identified in this AD from Pratt & Whitney, 400 Main St., East Hartford, CT 06108, telephone (860) 565-7700; fax (860) 565-1605.

You may examine the AD docket at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA. You may examine the service information, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

**FOR FURTHER INFORMATION CONTACT:** Keith Lardie, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; telephone (781) 238-7189; fax (781) 238-7199.

**SUPPLEMENTARY INFORMATION:** The FAA proposed to amend 14 CFR Part 39 with a proposed AD. The proposed AD applies to PW JT8D-209, -217, -217A, -217C, and -219 turbofan engines. We published the proposed AD in the Federal Register on December 30, 2005 (70 FR 77342). That action proposed to require either replacing HPC front hubs and HPC disks that have operated at any time with PWA 110-21 coating and that operated in certain engine models, or, visually inspecting and FMPI for cracking of those parts and re-plating them if they pass inspection. That action also proposed to require adding JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, -11, -15, -15A, -17, -17A, -17R, and -17AR engines to the applicability.

### **Examining the AD Docket**

You may examine the AD Docket (including any comments and service information), by appointment, between 8 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. See ADDRESSES for the location.

### **Comments**

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

### **Question the Need To Inspect Every Stage of the Disks**

Two commenters question the need to inspect disks from additional HPC stages. The commenters ask how many instances of cracking, to what severity, in what types of coating, which operators, and how many cycles were accumulated.

We do not agree. Our data shows that cracking was found in several HPC front hubs, as well as in other stages, if any mating surface between the HPC front hub and the 8-9 spacer is coated with PWA 110-21. Disks in other HPC stages have different initiation rates and, therefore, a lower risk of failing. But each stage has the same cause of cracking and carries a risk of failure that exceeds our risk criteria, if allowed to go until overhaul. We have no data that indicates the risk is operations dependent. We did not change the AD.

### **Request Clarification As To What Previous Actions Exempt an Engine From This AD**

Three commenters request clarification as to what previous actions exempt an engine from the requirements of this AD. They suggest that credit should be given to engines with HPC front hubs that have previously been inspected per PW Alert Service Bulletin (ASB) JT8D A6430 and associated AD 2002-23-14. They note that the proposed AD does not give this credit. They also suggest that the previous inspection under AD 2002-23-14 should be acceptable, even though the 7th stage HPC disks and 9th stage-through-12th stage HPC disks were not inspected. As currently written, the proposed AD would require operators to start the 8th stage HPC front hub inspection program over because all of the proposed actions required may not have been performed previously. Industry would be required to remove previously inspected engines from service, reinspect the 8th stage HPC front hub, and inspect and "overhaul" the entire HPC stack at tremendous expense and operational impact.

We agree. All previous inspections before the effective date of this superseding AD are acceptable. The inspection schedule for all affected disks is based only on the HPC front hub

inspection schedule. We will give credit for all engines that previously complied with AD 2003-23-14. However, from the time of the effective date of this AD, all HPC disks and hubs stages 7-through-12 must be inspected for disk fretting when the front hub is inspected. We added the following statement to compliance paragraph (e) of this AD: "Any engine with an HPC front hub that has been inspected using AD 2002-23-14, AD 2003-12-07, or AD 2003-16-05, is considered in compliance with this AD."

### **Inspection Schedule Seems Too Short an Interval**

Three commenters state that the inspection schedule for where the front hub is coated with Nickel-Cadmium and the 8-9 spacer is coated with PWA 110-21 seems too short an interval. Also, Rows (1) and (2) of Table 1 of the proposed AD seem inconsistent with the referenced PW ASBs. The commenters ask if this was the FAA's intent. For example, ASB JT8D A6430 is a less severe condition and allows the inspection to be postponed until next shop visit. Further, the ASBs force hub inspections (per the drawdown table) for hubs that operated with PWA 110-21 coating. But for hubs that only operated plated with Nickel-Cadmium (regardless of spacer coating type), the inspections are performed when the hub is accessible.

We partially agree. The risk for front hubs plated with Nickel-Cadmium is less severe than if the HPC front hub is coated with PWA 110-21, so it is not accurate to maintain the same inspection limits. Our analysis does not agree with PW's that the risk is low enough to wait until next shop visit. We added Table 5 to maintain the inspection limits from AD 2002-23-14 in response to the comment.

### **Request To Clarify Inspection**

One commenter requests that we clarify that the inspection listed in PW ASB JT8D A6430, is valid for HPC front hubs coated with Nickel-Cadmium. Paragraphs 1. through 1.A, and 2. through 2.C of that ASB only refer to HPC front hubs that are coated with PWA 110-21.

We agree. We clarified the wording in this AD to indicate the correct inspection procedure.

### **Limit in Table 2 and Table 4 Should Be Changed**

Three commenters state that the limit in rows (iii) and (iv) of Table 2 and Table 4 of the proposed AD should be changed to match PW ASB JT8D A6430, Revision 2, dated December 23, 2004 and ASB JT8D A6468, dated December 23, 2004. It appears that the intent was to mirror the compliance as specified in the ASBs, but as-written, the compliance in rows (iii) and (iv) do not agree with the ASBs. Specifically, any disk with fewer than 5,000 cycles-in-service has conflicting requirements in rows (iii) and (iv).

We agree and made that change in the AD.

### **Request To Change "Hub Accessibility" to "Shop Visit"**

One commenter requests that we change the phrase "hub accessibility" to "shop visit" for determining the compliance schedule. The commenter points out that we defined "shop visit" in the proposed AD but did not use it in the compliance.

We partially agree. Since "shop visit" is not being used in the AD, we omitted all definitions and clarifications of "shop visit". We also included a definition of "accessible" in the AD, to parallel the ASB.

### **Request To Remove the Word "Terminating"**

One commenter requests that we remove the word "terminating" as described for the required inspections. The commenter states that their understanding is that the inspection is a onetime inspection and is not repetitive.

We agree. Only those HPC front hubs that are accessible and inspected before 5,000 cycles-in-service require re-inspection. We removed the word "terminating" from the AD.

### **Request To Change Table Titles**

One commenter requests that we change the titles of Table 2 and Table 4 of the proposed AD from "HPC Disk Inspection Schedule" to "HPC Front Hub Inspection Schedule", for clarification. We agree and made the changes in the AD.

### **Request To Add Additional Entries to Table 1**

One commenter requests that we add additional entries to Table 1 of the proposed AD to clarify AD applicability for Nickel-Cadmium coated HPC front hubs installed on JT8D-STD engines. We agree and have added a fourth column to Table 1 in the AD.

### **Request To Clarify the Intent To Inspect 8th Stage Hubs That Are in JT8D-1A, -1B, -7, -7A, -7B, -9, -9A, and -11 Engines**

One commenter requests that we clarify the intent to inspect 8th stage hubs that are in JT8D-1A, -1B, -7, -7A, -7B, -9, -9A, and -11 engines. The commenter states that Table 1 of the proposed AD appears to be in conflict with paragraph (f)(1) of the proposed AD.

We partially agree. Paragraph (f)(1) is not in conflict with Table 1, but we changed the AD to clarify that paragraph (f)(1) is for engines as applicable in Table 1.

### **Suggestion To Use Flowchart**

One commenter suggests that we replace Table 1 of the proposed AD with a yes/no flowchart, which would be much easier to use since the decision logic is clearly conveyed. The commenter states that the FAA requires operators to have simple and concise manuals to ensure technicians understand tasks to be performed at the appropriate intervals. Table 2 "HPC Disk Inspection Schedule" in the proposed AD is complex, with numerous back and forth reading to determine the correct inspection interval.

We partially agree. Our table format is adequate. Therefore, we did not change the table format in the AD. But we also interpret the commenter's suggestion as a request for additional clarity in the table's wording, similar to other comments we received. As noted in response to other comments, we made several changes to the AD for clarification as a result of earlier comments. No further clarification is needed.

### **Request To List Engine Manual Inspection and Associated Limits**

One commenter requests that we revise the proposed AD language that mandates use of inspection criteria from the service bulletins, to list the Engine Manual inspection and associated limits. The commenter states that the proposed AD language requires a strict adherence to the exact PW procedures. Operators have other Certificate Management Organization-approved maintenance programs that use alternate materials or processes. As written, operators would have to request Alternative Means of Compliance (AMOCs) to use their equivalent processes.

We do not agree. As the standard practices of PW change, we will reevaluate them. Operators should submit an AMOC if they want to use other methods than those in this AD. We did not change the AD.

### **Request To Only Allow Use of Electroless Nickel**

One commenter requests that we change the proposed AD to only allow the use of Electroless Nickel. The proposed AD allows operators to restore the coating with Nickel-Cadmium. The PW Engine Manual allows the electrical contact area used on the spacers during Nickel-Cadmium restoration to be covered with PWA 595 (Aluminide paint) placing the same coating in the same critical areas of concern. ASB JT8D A6468 leaves the electrical contact areas bare after the Nickel-Cadmium is applied. The bare electrical contact areas are open to oxidation. Using Electroless Nickel would eliminate the potential for corrosion in bare electrical contact areas resulting from the Nickel-Cadmium process.

We do not agree that Electroless Nickel should be the only coating used. That would mean that Nickel-Cadmium coating must also be eliminated. Electroless Nickel may only be used on the spacers; not the disks. The data we have shows that corrosion on spacers is not an issue in the field. However, eliminating Electroless Nickel would leave several disks without protection against corrosion. We did not change the AD.

### **Request To Add Requirement That No PWA 110-21 Coated Units Be Re-Installed**

One commenter requests that we standardize the coatings applied to all the steel disks and spacers, with a requirement that after the effective date of the AD, no PWA 110-21 coated units are to be installed in engines and or modules. PW ASB JT8D A6468 implies that the PWA 110-21 coating is no longer to be used. The detail in the accomplishment section of the ASB allows PWA 110-21 and Nickel-Cadmium to be applied to the disks and or hubs. Spacers can use one of three coatings, which are Nickel-Cadmium, PWA 110-21, or Electroless Nickel. Accomplishment of ASB JT8D A6468 is not proof that the units have eliminated PWA 110-21 coating from disks, hubs, and spacers. The current JT8D Engine Manual, P/N 481672, allows for any coating to be applied to the units under the proposed AD.

We agree. 7th stage HPC disks, HPC front hubs, and stage 8-9 spacers coated with PWA 110-21 are not serviceable. Removing the option to use PWA 110-21 coating from the engine manual prevents recoating and installing them. We changed the AD to prevent installation of those PWA 110-21 coated parts.

### **Request To Continue This Inspection Program on All Units**

One commenter requests that we continue the inspection program even when operators install units that are not coated with PWA 110-21. The commenter states that the FAA is proposing to terminate the inspection program when the operators install units that have never used PWA 110-21 or come in contact with PWA 110-21. This proposed AD could lead to noncompliance with the proposed AD, by the simple introduction of one unit that has been coated with PWA 110-21, as the FAA has not forced elimination of PWA 110-21 coating.

We do not agree. This AD does not terminate the previous inspection program. The other disks are still subject to an inspection at the next shop visit per other ADs, mitigating the risk of cracking due to fretting. We did not change the AD.

### **Claim That Estimated Costs of Proposed AD Understated**

One commenter claims the estimated total cost to U.S. operators of the proposed AD is understated. The commenter estimates the labor hours to reassemble the areas accessed and make each engine serviceable, to be 172 hours. Further, the number of engines in service exceeds 1,573 since all engines will be affected by the proposed AD, unless the inspection program for the hubs is synchronized with AD 2003-12-07.

We do not agree. The commenter provided no data that indicates our estimate of affected U.S. engines is wrong, or that every engine will require 172 hours of work. Our analysis indicates this AD will result in only some engines being removed from service early. Further, we allow credit for previous inspections per AD 2002-23-14, as well as AD 2003-12-07 and AD 2003-16-05. We did not change the AD.

### **Complete Visual Inspection Labor Hours Should Be Included**

One commenter states that the labor hours for the complete visual inspection should be included in the cost of the proposed AD. The proposed AD implies that the inspection for corrosion as the result of fretting is a simple visual inspection. The inspection for corrosion requires a complete removal of the corrosion preventative coating and close visual examination with precision equipment or recognized standard to accurately determine the extent and depth of the corrosion in areas outside the spacer contact area

We do not agree. The commenter provided no data to show that the AD will take longer than our estimate. We are only addressing costs related to the visual inspection for disk fretting. This AD is not about corrosion, and the inspection does not require specialized equipment. We did not change the AD.

### **Claim That Costs of Records Research Not Included**

Two commenters claim the proposed AD does not include the cost of records research. They suggest that operators will have to do extensive research of the engine and HPC module records. The only reliable records are the hub hours and cycles accumulated, indicating hub utilization in the engines. One of the commenters estimates that each engine search will require 8 labor hours.

We do not agree. The cost to research records is not a valid cost for including in an estimate of cost of compliance for proposed ADs. We did not change the AD.

### **Additional Conditional Inspection Adds to the Cost**

One commenter states that the proposed AD includes a conditional requirement to inspect the remaining steel HPC disks and or hubs whenever the 8th stage hub is inspected. Unless it is synchronized with AD 2003-12-07, this additional conditional inspection adds to the cost of compliance to the proposed AD. Airworthiness Directive 2003-12-07 currently requires inspection of the disks every four to eight calendar years, depending on the disk configuration or at two to four years, at shop exposure.

We do not agree. Our costs estimate considers inspections that occur before a scheduled shop visit as a result of this AD. We do not consider the costs to comply with other ADs or requirements to be costs directly associated with this AD. We did not change the AD.

### **Claim That Including JT8D-1 Through -17AR Series Engines Is Unnecessary**

Two commenters claim that including the JT8D-1 through -17AR series engines into (the AD superseding) AD 2002-23-14 (JT8D-200 series) is unnecessary, based on the similarity of current requirements of AD 2003-12-07 and AD 2003-16-05. AD 2003-12-07 has a more restrictive

inspection interval than the inspections of the proposed AD. Discontinuing PWA 110-21 coating at the next disk spacer overhaul and only allowing Nickel-Cadmium recoating would be a more effective method to enhancing safety than the proposed AD. In addition, the HPC 7-12 stage disk "Corrosion ADs" drive the inspection of HPC 7-through-12 stage disks per the engine manual Inspection 01 and Inspection 02 for the applicable disks. Inspection 01 specifies the accomplishment of Inspection 03 (FMPI) and Inspection 04 (Fretting Inspection). During the accomplishment of AD 2003-16-05, the disks are stripped, visually and FMPI inspected, re-identified, and replated with Nickel-Cadmium. These procedures are identical to the procedures listed in this proposed AD.

We do not agree. AD 2002-23-14 is only more restrictive for low- and medium-utilization carriers. For high-utilization carriers and older engines, this AD is more restrictive, which is why we proposed this AD. The inspections in AD 2003-12-07 and AD 2003-16-05, are similar, but not identical, nor are their compliance times the same as this AD. We did not change the AD.

### **Clarification of Definition**

In preparing the responses to the commenters requesting clarity, we found that our proposed definition of accessible in paragraph (o) could be clearer, and should coincide with how the term is used in Tables 2 and 4. We did not change the meaning of the definition, but changed it from "(o) For the purposes of this AD accessibility of the HPC front hub is removing the hub from the engine and deblading that hub" to read "(q) For the purpose of this AD, "accessible" is defined as when the HPC front hub is removed from the engine and the hub is debladed." It is now paragraph (q) because we added prohibition paragraphs (o) and (p) to this AD.

### **Conclusion**

We carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

### **Costs of Compliance**

About 1,573 JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, -11, -15, -15A, -17, -17A, -17R, and -17AR turbofan engines, and 1,280 JT8D-200 series turbofan engines, installed on airplanes of U.S. registry will be affected by this AD. We estimate it will take about 12 work-hours per engine to perform the proposed actions, and the average labor rate is \$65 per work-hour. We also estimate 175 of those engines will be removed before reaching scheduled maintenance, and will require an additional 60 work-hours to disassemble and reassemble each engine. Based on these figures, we estimate the total cost of the AD to U.S. operators to be \$2,907,840.

### **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

## **Regulatory Findings**

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a "significant regulatory action" under Executive Order 12866;
- (2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary by sending a request to us at the address listed under ADDRESSES. Include "AD Docket No. 2001-NE-30-AD" in your request.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **Adoption of the Amendment**

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends 14 CFR part 39 as follows:

### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by removing 39-12958 (67 FR 70686, November 26, 2002) and by adding a new airworthiness directive, Amendment 39-14728, to read as follows:



# AIRWORTHINESS DIRECTIVE

[www.faa.gov/aircraft/safety/alerts/](http://www.faa.gov/aircraft/safety/alerts/)  
[www.gpoaccess.gov/fr/advanced.html](http://www.gpoaccess.gov/fr/advanced.html)

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**



**2006-17-07 Pratt & Whitney:** Amendment 39-14728. Docket No. 2001-NE-30-AD.

## Effective Date

(a) This airworthiness directive (AD) becomes effective October 4, 2006.

## Affected ADs

(b) This AD supersedes AD 2002-23-14, Amendment 39-12958.

## Applicability

(c) This AD applies to the following Pratt & Whitney (PW) JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, -11, -15, -15A, -17, -17A, -17R, -17AR, -209, -217, -217A, -217C, and -219 turbofan engines, with 8th stage high pressure compressor (HPC) front hubs:

**Table 1 - AD Applicability**

<b>If the HPC Front Hub Is Coated With:</b>	<b>And If the Stage 8-9 Spacer Is Coated With:</b>	<b>And the HPC Front Hub:</b>	<b>Then This AD Is:</b>
(1) PWA 110-21 at any time.	Any.	Operated in a JT8D-15, -15A, -17, -17R, or -17AR engine.	Applicable. See paragraph (f) and Table 2 of this AD.
(2) PWA 110-21 at any time.	Any.	Operated in a JT8D-209, -217, -217A, -217C, or -219 engine.	Applicable. See paragraph (h) and Table 4 of this AD.
(3) Nickel-Cadmium.	PWA 110-21 at any time.	Operated in a JT8D-209, -217, -217A, -217C, or -219 engine.	Applicable. See paragraph (i) and Table 5 of this AD.
(4) Nickel-Cadmium.	PWA 110-21 at any time.	Operated in a JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, -11, -15, -15A, -17, -17R, or -17AR engine.	Not applicable.
(5) PWA 110-21 at any time.	Any.	Operated in a JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, or -11, but never operated in a JT8D-15, -15A, -17, -17A, -17R, -17AR, -209, -217, -217A, -217C, or -219 engine.	Not applicable.
(6) Nickel-Cadmium.	Any type but PWA 110-21.	---	Not applicable.

These engines are installed on, but not limited to, Boeing DC-9, MD-80 series, 727 series, and 737 series airplanes.

## Unsafe Condition

(d) This AD results from an investigation by PW which concluded that any HPC front hub or HPC disk coated with PWA 110-21 that ever operated on JT8D-15, -15A, -17, -17A, -17R, -17AR, -209, -217, -217A, -217C, and -219 turbofan engines, could crack before reaching their published life limit. We are issuing this AD to prevent a rupture of an HPC front hub or an HPC disk that could result in an uncontained engine failure and damage to the airplane.

## Compliance

(e) You must accomplish the actions required by this AD within the compliance times specified, unless the actions have already been done. Any engine with an HPC front hub that has been inspected using AD 2002-23-14, AD 2003-12-07, or AD 2003-16-05, is considered in compliance with this AD.

### **JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, -11, -15, -15A, -17, -17A, -17R, and -17AR Turbofan Engines—Inspect or Replace HPC Front Hubs, HPC Disks, and Stage 8-9 Spacers**

(f) For applicable JT8D-1, -1A, -1B, -7, -7A, -7B, -9, -9A, -11, -15, -15A, -17, -17A, -17R, and -17AR turbofan engines specified in Table 1 of this AD, do the following:

(1) Using the inspection schedule in Table 2 of this AD, strip the protective coating, visually inspect for fretting wear, fluorescent magnetic particle inspect (FMPI) for cracks, reidentify, replate HPC front hubs and stage 8-9 spacers, and replace if necessary.

(2) Use paragraphs 1. through 3.B.(7)(b) under "For Rear Compressor Front Hubs that Have Operated With PWA 110-21 coating AT ANY TIME During Their Service Life in JT8D-15, -15A, -17, -17A, -17R, -17AR Engine Models." of PW Alert Service Bulletin (ASB) JT8D A6468, dated December 23, 2004.

**Table 2 – HPC Front Hub Inspection Schedule**

<b>HPC Front Hub Cycles-Since-New (CSN) on the Effective Date of This AD</b>	<b>Inspect Before Additional Cycles-In-Service (CIS) or CSN, Whichever Occurs First</b>	<b>Also Inspect 7<sup>th</sup> Stage HPC Disks and 9<sup>th</sup> Stage-through-12<sup>th</sup> Stage HPC Disks Using:</b>
(i) 19,000 or more.	500 CIS or 20,000 CSN.	Paragraph (f)(3) of this AD.
(ii) 15,500 or more, but fewer than 19,000.	1,000 CIS or 19,500 CSN.	Paragraph (f)(3) of this AD.
(iii) 5,000 or more, but fewer than 15,500.	16,500 CSN.	Paragraph (f)(3) of this AD.
(iv) Fewer than 5,000 that are accessible.	If the parts have been inspected and are acceptable, parts may be reinstalled. Inspect again using the criteria in (iii) of this Table.	Paragraph (f)(3) of this AD.

(3) When the HPC front hub is inspected, visually inspect for fretting wear and FMPI for cracks on 7th stage HPC disks and 9th stage-through-12th stage HPC disks. Inspection information can be found in the applicable sections of JT8D Engine Manual Part Number (P/N) 481672, listed in the following Table 3:

**Table 3 – Seventh Stage HPC Disks and 9<sup>th</sup> Stage-Through-12<sup>th</sup> Stage HPC Disks Inspection Information**

<b>Stage</b>	<b>Chapter/Section</b>	<b>Visual Inspection</b>	<b>Fretting Inspection</b>	<b>FMPI</b>
7	72-36-41	Inspection-01	Inspection-04	Inspection-03
9	72-36-43	Inspection-01	Inspection-04	Inspection-03
10	72-36-44	Inspection-01	Inspection-04	Inspection-03
11	72-36-45	Inspection-01	Inspection-04	Inspection-03
12	72-36-46	Inspection-01	Inspection-04	Inspection-03

**JT8D-15, -15A, -17, -17A, -17R, and -17AR Turbofan Engines–Cycle Adjustment for HPC Front Hubs That Entered Service With Nickel-Cadmium Plating and PWA 110-21 Coating**

(g) For JT8D-15, -15A, -17, -17A, -17R, and -17AR turbofan engines with front hubs that entered service with Nickel-Cadmium plating and PWA 110-21 coating, but have also operated during the life of the hub with PWA 110-21 coating:

(1) You are allowed to make a cycle adjustment if the hub was never operated with a PWA 110-21-coated stage 8-9 spacer.

(2) Use the information under "Compliance" of PW ASB JT8D A6468, dated December 23, 2004, to determine the adjustment.

**JT8D-209, -217, -217A, -217C, and -219 Turbofan Engines–Inspect or Replace HPC Front Hubs and Stage 8-9 Spacers**

(h) For applicable JT8D-209, -217, -217A, -217C, and -219 turbofan engines specified in Table 1, Row (1) of this AD, do the following:

(1) Using the inspection schedule in Table 4 of this AD, strip the protective coating, visually inspect for fretting wear, FMPI for cracking, reidentify, replat HPC front hubs and the stage 8-9 spacers, and replace if necessary.

(2) Use paragraphs 1. through 1.A. and paragraphs 2. through 2.C.(2)(g)2 of Accomplishment Instructions of PW ASB JT8D A6430, Revision 2, dated December 23, 2004.

**Table 4 – HPC Front Hub Inspection Schedule – Hubs Coated With PWA 110-21**

<b>HPC Front Hub CSN On the Effective Date of This AD</b>	<b>Inspect Before Additional CIS or CSN, Whichever Occurs First</b>	<b>Also Inspect 7<sup>th</sup> Stage HPC Disks and 9<sup>th</sup> Stage-through-12<sup>th</sup> Stage HPC Disks Using:</b>
(i) 19,000 or more.	500 CIS or 20,000 CSN.	Paragraph (h)(3) of this AD.
(ii) 15,500 or more, but fewer than 19,000.	1,000 CIS or 19,500 CSN.	Paragraph (h)(3) of this AD.
(iii) 5,000 or more, but fewer than 15,500.	16,500 CSN.	Paragraph (h)(3) of this AD.
(iv) Fewer than 5,000 that are accessible.	If the parts have been inspected and are acceptable, parts may be reinstalled. Inspect again using the criteria in (iii) of this Table.	Paragraph (h)(3) of this AD.

(i) For applicable JT8D-209, -217, -217A, -217C, and -219 turbofan engines specified in Table 1, Row (2) of this AD, do the following:

(1) Using the inspection schedule in Table 5 of this AD, strip the protective coating, visually inspect for fretting wear, FMPI for cracking, reidentify, replat HPC front hubs and the stage 8-9 spacers, and replace if necessary.

(2) Use paragraphs 1., 1.C, and 4. through 4.C.(2)(g)2 of Accomplishment Instructions of PW ASB JT8D A6430, Revision 2, dated December 23, 2004, for all applicable hubs with any type of coating.

**Table 5 – HPC Front Hub Inspection Schedule – Hubs Coated With Nickel-Cadmium**

<b>HPC Front Hub CSN On the Effective Date of This AD</b>	<b>Inspect Before Additional CIS or CSN, Whichever Occurs First</b>	<b>Also Inspect 7<sup>th</sup> Stage HPC Disks and 9<sup>th</sup> Stage-through-12<sup>th</sup> Stage HPC Disks Using:</b>
(i) 19,000 or more.	500 CIS or 20,000 CSN.	Paragraph (h)(3) of this AD.
(ii) 17,000 or more, but fewer than 19,000.	1,000 CIS or 19,500 CSN.	Paragraph (h)(3) of this AD.
(iii) 9,000 or more, but fewer than 17,000, that have not been inspected.	18,000 CSN.	Paragraph (h)(3) of this AD.
(iv) 9,000 or more, but fewer than 17,000, that were inspected before accumulating 9,000 CSN.	15,500 CSN.	Paragraph (h)(3) of this AD.

(j) When the HPC front hub is inspected, visually inspect for fretting wear and FMPI for cracks on 7th stage HPC disks and 9th stage-through-12th stage HPC disks. Inspection information can be found in the applicable sections of JT8D-200 Engine Manual P/N 773128, listed in Table 3 of this AD.

**JT8D-209, -217, -217A, -217C, and -219 Turbofan Engines—Cycle Adjustment for HPC Front Hubs That Entered Service With Nickel-Cadmium Plating and PWA 110-21 Coating**

(k) For JT8D-209, -217, -217A, -217C, and -219 turbofan engines with HPC front hubs that entered service with Nickel-Cadmium plating, but have also operated during the life of the hub with PWA 110-21 coating:

(1) You are allowed to make a cycle adjustment.

(2) Use the information under "CONDITION A" of PW ASB JT8D A6430, Revision 2, dated December 23, 2004, to determine the adjustment.

**Replacement of HPC Front Hubs and Stage 8-9 Spacers That Have Operated With PWA 110-21 Coating, As Optional Action—All Engines**

(l) For all applicable engines, as an optional action for the visual inspections in this AD, replace HPC front hubs and stage 8-9 spacers that have operated with PWA 110-21 coating in the interface between the hub and the stage 8-9 spacer and HPC disks currently coated with PWA 110-21, as follows:

(1) Install a Nickel-Cadmium plated HPC front hub that has never operated with PWA 110-21 coating in the interface between the HPC front hub and the stage 8-9 spacer.

- (2) Install a Nickel-Cadmium plated or Electroless Nickel-plated stage 8-9 spacer.
- (3) Install HPC disks that have never operated with PWA 110-21 coating.

### **Prohibition Against Recoating the HPC Front Hub, Stage 7 HPC Disk, and Stage 8-9 Spacer With PWA 110-21—All Engines**

(m) Do not recoat the HPC front hub with PWA 110-21 (Repair-23 of Chapter/Section 72-36-42 of JT8D-200 Engine Manual, P/N 773128, and Repair-27 and Repair-28 of Chapter/Section 72-36-42 of JT8D Engine Manual, P/N 481672).

(n) Do not recoat the 7th stage disk with PWA 110-21 (Repair-15 of Chapter/Section 72-36-41 of JT8D-200 Engine Manual, P/N 773128, and Repair-15 of Chapter/Section 72-36-41 of JT8D Engine Manual, P/N 481672).

(o) Do not recoat the stage 8-9 spacer with PWA 110-21 (Repair-03, Task 72-36-12-30-003-002, of Chapter/Section 72-36-12 of JT8D-200 Engine Manual, P/N 773128, and Repair-01, Task 72-36-12-30-001-002, of Chapter/Section 72-36-12 of JT8D Engine Manual, P/N 481672).

### **Prohibition Against Reinstalling HPC Front Hubs and Stage 8-9 Spacers Coated With PWA 110-21**

(p) After the effective date of this AD, do not reinstall HPC front hubs and stage 8-9 spacers coated with PWA 110-21.

### **Definition**

(q) For the purpose of this AD, "accessible" is defined as when the HPC front hub is removed from the engine and the hub is debladed.

### **Alternative Methods of Compliance**

(r) The Manager, Engine Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

### **Related Information**

(s) None.

### **Material Incorporated by Reference**

(t) You must use the service information specified in Table 6 of this AD to perform the actions required by this AD. The Director of the Federal Register approved the incorporation by reference of the documents listed in Table 6 of this AD in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Pratt & Whitney, 400 Main St., East Hartford, CT 06108, telephone (860) 565-7700; fax (860) 565-1605 for a copy of this service information. You may review copies at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

**Table 6 – Incorporation by Reference**

<b>Pratt &amp; Whitney Alert Service Bulletin No.</b>	<b>Page</b>	<b>Revision</b>	<b>Date</b>
JT8D A6430	ALL	2	December 23, 2004
Total Pages: 35			
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Total Pages: 20			

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Francis A. Favara,

Manager, Engine and Propeller Directorate, Aircraft Certification Service.

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